

CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-10-26
18 – 27 August 2010
Total Number of Sea Days - 10

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

125 camera-trap deployments
9 longline deployments
24 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 18 August 2010 at 1045 to initiate the Southeast Fishery-Independent Survey (SEFIS) in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 27.71°N and 31.74° N. A total of 125 stations were sampled with camera-trap gear over 10 sea days between 19 and 64 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, most of which had one or more mounted high-definition video cameras, were utilized for hardbottom reef fish community assessments and collection of reef fish for biological samples (i.e., otoliths and gonads). Longline sampling was also conducted at 9 stations.
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted primarily of two high definition video cameras mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. GoPro cameras (model HD Hero[®]) were mounted above the mouth and on the nose of the trap, each looking away from the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

Longline Sampling

We also deployed longlines to sample high-relief areas that were too difficult to sample with chevron traps. Longlines used in these areas were relatively short (25.6 m of solid braid Dacron) and consisted of 20 gangions (#5 or #7 hooks) placed 1.2 m apart on the groundline (called ‘short bottom long lines’ by MARMAP). The longline was weighted and attached to a polypropylene line that was buoyed to the surface with two polyballs. Longlines were baited with squid and soaked for approximately 90 minutes. Similar to chevron trap samples, fish collected with longline gear were counted, weighed, measured, and processed for biological samples (otoliths, gonads, and DNA).

Environmental Data Collection

Environmental data were collected with a Seabird “Conductivity, Temperature and Depth” instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (°C), salinity (parts per thousand), dissolved oxygen (mg/L), and turbidity (% transmission). CTD data were archived for further processing at the Beaufort laboratory. SCS software (version 4.2.3) was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Camera-Trap Sampling

125 stations were sampled with camera-trap gear (Table 1, Figure 2). From these traps, 23 taxa were collected and worked up for length frequency data.

Longline Sampling

9 stations were sampled with longline gear and 3 taxa were collected.

Environmental Data Collection

24 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data were processed back at the lab using Seabird SBE Data Processing software (version 7.2) and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth, date and time for each fishing event (camera-trap Gear=324, longline Gear=061) and CTD cast (Gear=298) conducted on the SH-10-26 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100057	324	8/18/2010	21:09:00	31.74	-80.23	32
100058	324	8/18/2010	21:13:00	31.74	-80.23	33
100059	324	8/18/2010	21:16:00	31.74	-80.22	32
100060	324	8/18/2010	21:20:00	31.74	-80.22	32
100061	324	8/18/2010	21:27:00	31.74	-80.22	32
100062	324	8/18/2010	21:39:00	31.74	-80.21	33
100063	298	8/18/2010	21:48:00	31.74	-80.22	33
100064	324	8/19/2010	11:55:00	30.45	-80.21	51
100065	324	8/19/2010	12:09:00	30.44	-80.21	51
100066	324	8/19/2010	12:22:00	30.43	-80.21	51
100067	324	8/19/2010	12:35:00	30.43	-80.21	52
100068	324	8/19/2010	12:49:00	30.42	-80.21	50
100069	324	8/19/2010	13:04:00	30.42	-80.21	60
100070	298	8/19/2010	13:15:00	30.42	-80.20	67
100071	061	8/19/2010	15:42:00	30.43	-80.21	53
100072	061	8/19/2010	16:01:00	30.43	-80.21	53
100073	061	8/19/2010	16:25:00	30.44	-80.21	53
100074	298	8/19/2010	16:34:00	30.43	-80.20	63
100075	061	8/19/2010	18:42:00	30.44	-80.21	55
100076	061	8/19/2010	18:52:00	30.44	-80.21	54
100077	061	8/19/2010	19:08:00	30.45	-80.20	59
100078	324	8/19/2010	19:15:00	30.45	-80.20	57
100079	324	8/19/2010	19:24:00	30.45	-80.20	59
100080	324	8/19/2010	19:37:00	30.46	-80.20	53
100081	298	8/19/2010	19:55:00	30.45	-80.20	63
100082	324	8/19/2010	21:50:00	30.46	-80.19	64
100083	324	8/19/2010	22:00:00	30.47	-80.20	52
100084	324	8/19/2010	22:09:00	30.47	-80.20	58
100085	298	8/19/2010	22:18:00	30.47	-80.19	64
100086	324	8/20/2010	13:13:00	29.17	-80.24	40
100087	324	8/20/2010	13:21:00	29.17	-80.24	51
100088	324	8/20/2010	13:34:00	29.17	-80.23	54
100089	324	8/20/2010	13:43:00	29.16	-80.23	51
100090	324	8/20/2010	13:57:00	29.16	-80.23	51
100091	324	8/20/2010	14:10:00	29.15	-80.23	51
100092	298	8/20/2010	14:23:00	29.16	-80.23	53
100093	324	8/20/2010	19:17:00	28.87	-80.26	43

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100094	324	8/20/2010	19:25:00	28.86	-80.26	42
100095	324	8/20/2010	19:28:00	28.86	-80.26	42
100096	324	8/20/2010	19:39:00	28.86	-80.26	42
100097	324	8/20/2010	19:51:00	28.85	-80.25	42
100098	324	8/20/2010	19:57:00	28.85	-80.25	41
100099	298	8/20/2010	20:07:00	28.85	-80.25	41
100100	324	8/20/2010	22:10:00	28.84	-80.25	43
100101	324	8/20/2010	22:26:00	28.84	-80.25	42
100102	324	8/20/2010	22:28:00	28.84	-80.25	42
100103	298	8/20/2010	22:44:00	28.84	-80.24	45
100104	324	8/21/2010	11:38:00	27.87	-80.15	29
100105	324	8/21/2010	11:44:00	27.87	-80.16	28
100106	324	8/21/2010	11:58:00	27.86	-80.15	28
100107	324	8/21/2010	12:01:00	27.86	-80.16	28
100108	324	8/21/2010	12:07:00	27.86	-80.16	28
100109	324	8/21/2010	12:22:00	27.85	-80.16	27
100110	298	8/21/2010	12:36:00	27.86	-80.15	30
100111	324	8/21/2010	15:34:00	27.75	-80.14	24
100112	324	8/21/2010	15:42:00	27.75	-80.13	26
100113	324	8/21/2010	15:51:00	27.74	-80.13	28
100114	324	8/21/2010	15:56:00	27.74	-80.14	25
100115	324	8/21/2010	16:15:00	27.74	-80.13	22
100116	324	8/21/2010	16:22:00	27.74	-80.13	28
100117	298	8/21/2010	16:32:00	27.74	-80.13	28
100118	324	8/21/2010	18:42:00	27.72	-80.13	25
100119	324	8/21/2010	18:52:00	27.72	-80.13	26
100120	324	8/21/2010	18:59:00	27.71	-80.13	23
100121	324	8/21/2010	19:03:00	27.71	-80.12	26
100122	324	8/21/2010	19:11:00	27.71	-80.12	25
100123	324	8/21/2010	19:16:00	27.71	-80.13	25
100124	298	8/21/2010	19:30:00	27.71	-80.13	24
100125	324	8/22/2010	11:53:00	27.76	-80.01	55
100126	324	8/22/2010	12:08:00	27.76	-80.01	57
100127	324	8/22/2010	12:17:00	27.76	-80.02	53
100128	324	8/22/2010	12:23:00	27.76	-80.01	60
100129	324	8/22/2010	12:44:00	27.76	-80.01	55
100130	324	8/22/2010	12:54:00	27.76	-80.02	52
100131	298	8/22/2010	13:09:00	27.76	-80.00	61
100132	324	8/22/2010	15:24:00	27.78	-80.01	57
100133	324	8/22/2010	15:28:00	27.78	-80.01	55
100134	324	8/22/2010	15:41:00	27.79	-80.02	53

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100135	324	8/22/2010	15:45:00	27.79	-80.01	54
100136	324	8/22/2010	15:59:00	27.79	-80.01	57
100137	324	8/22/2010	16:04:00	27.79	-80.01	55
100138	298	8/22/2010	16:22:00	27.79	-80.01	59
100139	324	8/22/2010	18:38:00	27.79	-80.01	55
100140	324	8/22/2010	18:41:00	27.79	-80.01	55
100141	324	8/22/2010	18:56:00	27.79	-80.01	55
100142	061	8/22/2010	19:09:00	27.79	-80.01	57
100143	061	8/22/2010	19:19:00	27.78	-80.01	60
100144	061	8/22/2010	19:31:00	27.78	-80.01	56
100145	298	8/22/2010	19:40:00	27.78	-80.01	59
100146	324	8/23/2010	11:44:00	28.86	-80.17	55
100147	324	8/23/2010	11:56:00	28.86	-80.18	60
100148	324	8/23/2010	12:07:00	28.86	-80.17	51
100149	324	8/23/2010	12:21:00	28.87	-80.17	54
100150	324	8/23/2010	12:36:00	28.87	-80.17	51
100151	324	8/23/2010	12:49:00	28.87	-80.17	58
100152	298	8/23/2010	12:57:00	28.87	-80.17	55
100153	324	8/23/2010	14:55:00	28.88	-80.17	51
100154	324	8/23/2010	15:09:00	28.88	-80.17	52
100155	324	8/23/2010	15:17:00	28.89	-80.18	50
100156	324	8/23/2010	15:24:00	28.89	-80.18	51
100157	324	8/23/2010	15:34:00	28.89	-80.18	50
100158	324	8/23/2010	15:45:00	28.90	-80.18	50
100159	298	8/23/2010	15:54:00	28.90	-80.17	55
100160	324	8/23/2010	18:25:00	28.95	-80.18	52
100161	324	8/23/2010	18:25:00	28.96	-80.18	52
100162	324	8/23/2010	18:36:00	28.96	-80.18	52
100163	324	8/23/2010	18:45:00	28.97	-80.18	53
100164	324	8/23/2010	18:54:00	28.97	-80.19	53
100165	324	8/23/2010	19:03:00	28.98	-80.19	52
100166	298	8/23/2010	19:12:00	28.99	-80.19	56
100167	324	8/23/2010	21:28:00	29.02	-80.19	52
100168	324	8/23/2010	21:40:00	29.03	-80.20	54
100169	324	8/23/2010	21:50:00	29.03	-80.20	55
100170	324	8/23/2010	22:00:00	29.03	-80.20	55
100171	324	8/23/2010	22:25:00	29.04	-80.20	55
100172	298	8/23/2010	22:33:00	29.04	-80.19	54
100173	324	8/24/2010	11:53:00	29.38	-80.95	60
100174	324	8/24/2010	11:56:00	29.38	-80.95	20
100175	324	8/24/2010	12:03:00	29.38	-80.94	20

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100176	324	8/24/2010	12:06:00	29.38	-80.94	19
100177	324	8/24/2010	12:09:00	29.37	-80.94	19
100178	324	8/24/2010	12:36:00	29.38	-80.94	19
100179	298	8/24/2010	12:55:00	29.38	-80.94	20
100180	324	8/24/2010	19:46:00	29.17	-80.61	25
100181	324	8/24/2010	19:55:00	29.17	-80.59	23
100182	324	8/24/2010	20:05:00	29.17	-80.59	27
100183	324	8/24/2010	20:17:00	29.17	-80.58	26
100184	324	8/24/2010	20:21:00	29.17	-80.58	23
100185	324	8/24/2010	20:26:00	29.18	-80.58	26
100186	298	8/24/2010	20:36:00	29.18	-80.58	26
100195	324	8/25/2010	20:11:00	29.86	-80.54	37
100196	324	8/25/2010	20:17:00	29.86	-80.54	35
100197	324	8/25/2010	20:29:00	29.86	-80.53	35
100198	324	8/25/2010	20:40:00	29.85	-80.53	35
100199	324	8/25/2010	20:50:00	29.85	-80.53	36
100200	324	8/25/2010	21:10:00	29.85	-80.53	36
100201	298	8/25/2010	21:26:00	29.86	-80.54	38
100202	324	8/26/2010	11:34:00	29.99	-80.28	56
100203	324	8/26/2010	11:48:00	29.99	-80.28	55
100204	324	8/26/2010	12:05:00	30.00	-80.28	54
100205	324	8/26/2010	12:14:00	30.01	-80.28	54
100206	324	8/26/2010	12:30:00	30.01	-80.28	54
100207	324	8/26/2010	12:41:00	30.02	-80.28	54
100208	298	8/26/2010	12:52:00	30.02	-80.27	66
100209	324	8/26/2010	15:11:00	30.03	-80.28	53
100210	324	8/26/2010	15:22:00	30.03	-80.28	53
100211	324	8/26/2010	15:32:00	30.04	-80.28	53
100212	324	8/26/2010	15:48:00	30.05	-80.28	55
100213	324	8/26/2010	16:01:00	30.05	-80.28	57
100214	324	8/26/2010	16:12:00	30.06	-80.28	53
100215	298	8/26/2010	16:25:00	30.06	-80.27	64
100216	324	8/26/2010	18:13:00	30.06	-80.28	53
100217	324	8/26/2010	18:41:00	30.07	-80.28	52
100218	324	8/26/2010	18:50:00	30.07	-80.28	54
100219	324	8/26/2010	19:04:00	30.08	-80.28	51
100220	324	8/26/2010	19:13:00	30.08	-80.27	50
100221	324	8/26/2010	19:21:00	30.08	-80.28	50
100222	298	8/26/2010	19:29:00	30.09	-80.27	62



Figure 1. Chevron trap with video cameras attached over the nose and mouth positions.

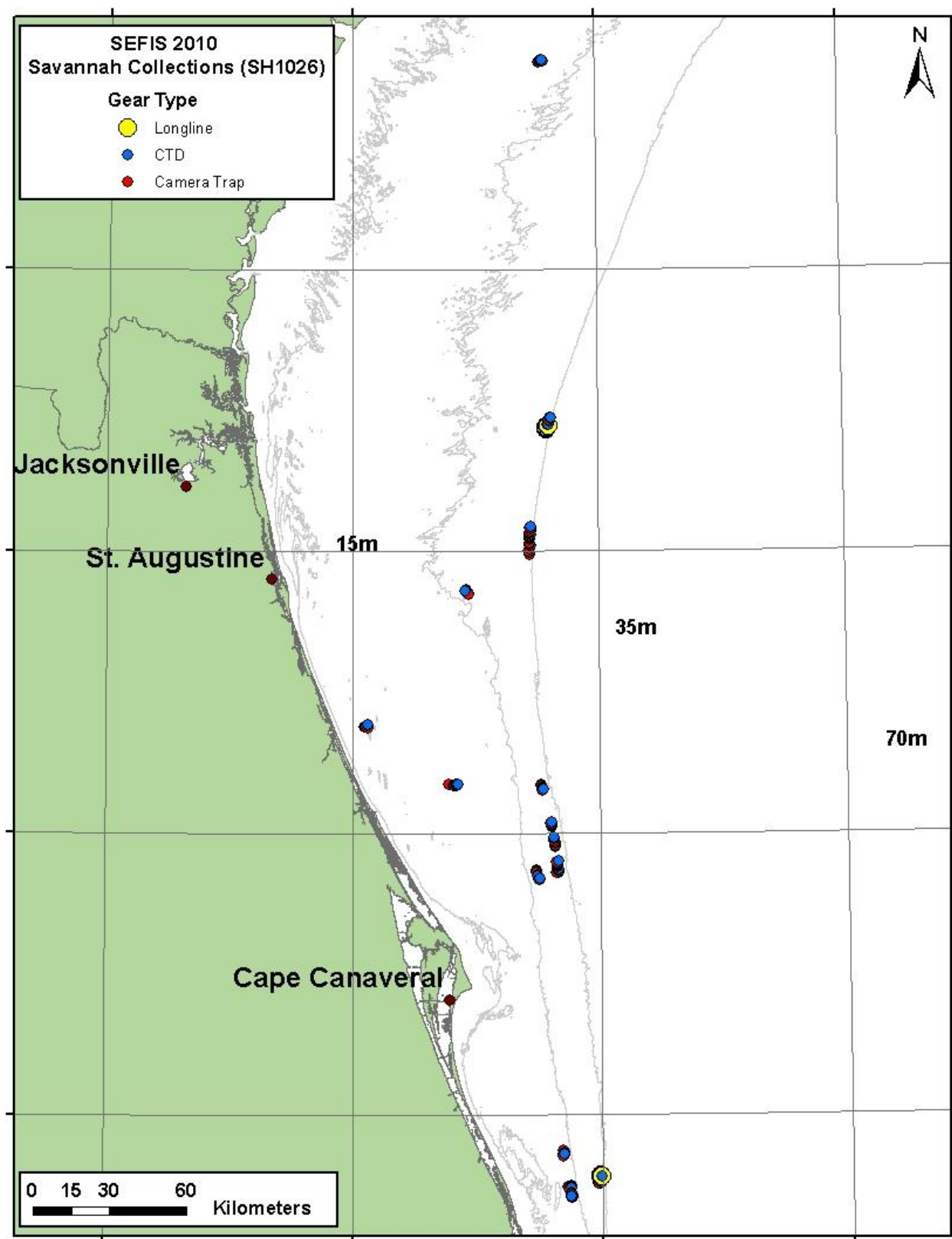


Figure 2. Locations of stations sampled with camera-trap and CTD gear on the SH-10-26 survey. Note that symbols overlap in many cases.

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